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Claims

- 5 1. A method of forming a radially expandable externally grooved tubular fastener from metal, comprising the steps of:-

providing a suitable tubular blank having a tubular wall;

and squeezing the tubular wall between an internal member with a surface which engages the internal tubular wall face of the blank and a plurality of external members provided with suitably shaped surfaces engaging the external tubular wall face of the blank;

10 thereby to form grooves on the external tubular wall face of the blank; in which the squeezing is achieved by the effective decrease in diameter of the engagement of the suitably shaped surfaces of the external members with the external tubular wall face of the blank.

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- 20 2. A method as claimed in claim 1, in which the squeezing is achieved by both the effective increase in diameter of the engagement of the internal tubular member with the internal tubular wall face of the blank and the effective decrease in the diameter of engagement of the suitably shaped surfaces of the external members with the external tubular wall face of the blank; and in which the external members are closed on to the external wall face of the tubular blank to form grooves thereon as aforesaid

25 and then remain in the same spatial relationship with each other until they are withdrawn as to release the blank.
- 30 3. A method as claimed in claim 1 or claim 2, in which the external members when closed on to the external tubular wall face of the blank form grooves thereon as aforesaid and also form a plurality of radially extending lugs or other protrusions thereon.
- 35 4. A method as claimed in claim 3, in which the external members are closed on to the external tubular wall face of the blank so as to leave a space between each member and the next, thereby to accommodate the protrusions from the grooves.

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5. A method as claimed in claim 4, in which the opposed walls of adjacent external members which define the spaces between them also assist in forming the protrusions.
- 5 6. A method as claimed in claim 2, in which the external members are first progressively closed on to the external tubular wall face of the blank to as to engage it as aforesaid and at least partially form grooves in it, and the internal member engages the internal tubular wall face of the blank with an increasing diameter, thereby to assist in the formation of the grooves.
- 10 7. A method as claimed in claim 2, in which the internal member has an external diameter which varies along its length, and is moved axially with respect to the tubular blank thereby to increase the diameter which engages the internal tubular wall face of the blank as aforesaid.
- 15 8. A method as claimed in any of claims 1 to 7, in which the grooves on the external tubular wall face of the blank are in the form of circumferential grooves.
- 20 9. A method as claimed in any of claims 1 to 7, in which the grooves on the external tubular wall face of the blank are in the form of a screw thread.
10. A method as claimed in any of claims 1 to 7, in which the grooves on the external tubular wall of the blank are in the form of longitudinal grooves.
- 25 11. A fastener formed by a method as claimed in any of the preceding claims.
12. A method of forming a radially expandable externally grooved tubular fastener from metal, comprising the steps of:-
- 30 providing a suitable tubular blank having a tubular wall;
- and squeezing the tubular wall between an internal member with a surface which engages the internal tubular wall face of the blank and a plurality of
- 35 external members provided with suitably shaped surfaces engaging the external tubular wall face of the blank;

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thereby to form grooves on the external tubular wall face of the blank and wherein the external members are closed on to the external tubular wall face of the blank so as to leave a space between each member and the next, thereby to accommodate the protrusions from the grooves

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